Information Bulletin
Title: Potential Terrorist Exploitation of Heating, Ventilation, and Air Conditioning (HVAC) Systems
Date: September 23, 2004

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This is a joint DHS and FBI Bulletin. Reference FBI Intelligence Bulletin No. 149.

ATTENTION: Homeland Security Advisors, Federal Departments and Agencies, Law Enforcement and First Responders, Information Sharing and Analysis Centers, and the Intelligence Community.

Based on this notification, no change to the Homeland Security Advisory System (HSAS) level is anticipated; the current HSAS national threat level is YELLOW-ELEVATED. The current threat level for the financial services sectors in New York City, Northern New Jersey and Washington, DC is ORANGE-HIGH.

DHS and FBI encourage recipients of this Bulletin to report information concerning suspicious or criminal activity to the local FBI Joint Terrorism Task Force (JTTF) – the FBI regional phone numbers can be found online at http://www.fbi.gov/contact/fo/fo.htm – and the Homeland Security Operations Center (HSOC). The HSOC can be reached via telephone at 202-282-8101 or by email at HSCenter@dhs.gov. For information affecting the private sector and critical infrastructure, contact the National Infrastructure Coordinating Center (NICC), a sub-element of the HSOC. The NICC can be reached via telephone at 202-282-9201 or via email at NICC@dhs.gov. When available, each report submitted should include the date, time, location, type of activity, number of people and type of equipment used for the activity, the name of the submitting company or organization and a designated point of contact (POC).

DETAILS

Al-Qaida and other terrorist groups have considered targeting heating, ventilation, and air conditioning (HVAC) systems of large commercial buildings. While the FBI and DHS possess

no specific information indicating a specific threat of HVAC systems in the United States being targeted, recipients are advised that terrorists may consider exploiting commercial air handling systems for dispersing chemical, biological, or other air contaminants.

Most, if not all, commercial and public service buildings in the United States--including office buildings, shopping centers, transit systems, and airports--have HVAC systems. HVAC systems typically have one or more air-intake systems that move air through the ventilation ducting circuit. It is possible to introduce chemical or biological agents directly into external air-intakes or internal air-circulation systems. Unless the building has carbon filters (or the equivalent), volatile chemical agents would not be stopped and would enter the building untenanted. Biological agents would require HEPA type filters to stop the aerosol from entering the building via the vent. Placement of a device within the outlet for a single room would produce a more concentrated hazard in a subset of the building.

Other scenarios involve the use of helicopters equipped with agricultural spraying equipment to discharge large chemical or biological contaminant clouds near external or roof-mounted air intakes or ventilators. Crosswinds, downdrafts from helicopter rotors, and updrafts from HVAC cooling fans, however, would detract from the effectiveness of a helicopter-borne attack. Another approach may be to locally introduce natural gas and other unidentified poisonous gases directly into the HVAC equipment by plumbing or direct spill. Typical contaminants might also include toxic gas, such as hydrogen cyanide gas or chlorine gas, or aerosolized toxins or bacteria, such as ricin or anthrax. Contaminants introduced in a sustained manner or in sufficient concentration could pose a risk of fire or explosion or create an inhalation or asphyxiation hazard, depending on the size of the building and proximity to introduction point.

Terrorists have considered producing a radiological dispersal device (RDD) by burning or exploding a source or sources containing radioactive material. If large quantities of easily dispersed radioactive material were released or exploded near an HVAC intake or circulation system, it is possible that targeted individuals could suffer some adverse health effects. It is more likely, however, that damage would result from the explosion rather than from any radiological disbursement.

None of these scenarios is likely to produce harmful, if not catastrophic casualties. However, the potential exists for causing harm to exposed persons. Also, considerable HVAC system damage is possible. Further, the economic consequences associated with rendering a building unusable during a lengthy decontamination period are potentially enormous, as evidenced in the 2001 anthrax attacks that involved small areas of several buildings.

SUGGESTED PROTECTIVE MEASURES

Facilities managers should have a current emergency plan that addresses chemical, biological, and radiological (CBR) attacks, know their building HVAC system vulnerabilities, and conduct periodic walk-through inspections of the systems for evidence of irregularities or tampering. Individuals developing emergency plans and procedures should recognize that there are fundamental differences among various CBR agents. In general, chemical agents will typically have a rapid onset of symptoms, while the response to biological or radiological agents can be delayed. Potential indicators of threats include suspicious packages or containers or unusual powders or liquids, droplets, mists, or clouds found near air-intake, in air-ventilation ductwork, and HVAC systems.

The variety of HVAC systems in use precludes an exhaustive listing of protective measures to take in the event of a terrorist attack involving HVAC systems. For specific guidance, facilities managers should consult their system's specialist. The following protective measures do, however, provide facilities manager’s general guidance for immediate steps to take to limit any dispersal of toxins and mitigate potential impact:

Outside Release

- In the event that a toxic substance has been released **outside** the building, keep individuals inside the building and reduce the indoor/outdoor air exchange to prevent contaminated air from passing through the HVAC system--immediately shut off the air handling system, close all windows and doors, and turn off fans and combustion heaters.

- Once the outdoor hazard has dissipated, open all doors and windows and turn on all fans to ventilate the building.

Inside Release

- If a toxic substance has been released **inside** a building, immediately place the air handling system on "full (or 100%) outside air." If advised of an in-building release of hydrogen cyanide gas, chlorine gases, or other toxic industrial chemicals, activate the water sprinklers to help wash the contaminant from the air stream. This would probably help for particulate aerosols like anthrax but will probably not work for vapors such as hydrogen cyanide gas or chlorine gas.

- Evacuate the building in accordance with the building's emergency evacuation plan. Evacuation routes may be hazardous because they may take people through contaminated areas. It is necessary to evaluate the scenario prior to evacuating the building to prevent additional injuries form occurring.

Facilities managers should note that, unless military and commercial detectors for toxic chemicals and biological pathogens are connected to automated shutoff/shutdown equipment, they are not as effective as in-line monitors within an air handling system because their response time is too slow. Facilities managers should assess their building vulnerabilities to HVAC attack and consider installing design and equipment modifications to make external air-intakes less accessible. Such options could include securing ventilation intake systems with perimeter fencing or relocating air-intakes to an inaccessible level, installing false or decoy air-intakes, and camouflaging actual air-intakes.

Law enforcement officers should take note of materials describing HVAC systems in the possession of individuals with no legitimate need for the materials, especially when accompanied by instructions and diagrams for improvised chemical or biological devices. Recipients should immediately report suspicious or criminal activities potentially related to terrorism to their local law enforcement representatives.

Information on suspicious activities potentially related to terrorism should be forwarded immediately to both the local FBI JTTF and the DHS HSOC as indicated on the first page.

For comments or questions related to the content or dissemination of this Information Bulletin, please contact the DHS/Information Analysis and Infrastructure Protection Directorate's Requirements Division at DHS.IAIP@DHS.GOV.